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72242(6653)

Amendments to the Claims:

A1 Sub B1

1. (currently amended): A method of integrated circuit design [~~the said method~~] comprising [~~the~~] steps of:

- (a) placing and wiring an integrated circuit design;
- (b) generating a slack graph to identify [~~a~~] identifying
critical paths in an integrated circuit design;
- (c) removing non-critical paths from the slack graph;
- (d) calculating a corresponding traversal weight for each
edge [~~b~~] weighting edges in the [~~identified said~~] critical paths;
- (e) assigning a net weight value [~~c~~] assigning net
criticality] to each [~~weighted~~] edge in the critical paths
from the corresponding traversal weight [~~responsive to edge~~
weight]; and
- (f) [~~d~~] re-placing and wiring nets according to the net
weight value to eliminate the critical paths from the
integrated circuit design [~~edge criticality~~].

2-3. (canceled)

4. (currently amended): A method of integrated circuit design comprising steps of:

- (a) placing and wiring an integrated circuit design;
- (b) identifying critical paths in the integrated circuit design;
- (c) calculating a corresponding traversal weight for each
edge in the critical paths;
- (d) assigning a net weight value to each edge in the
critical paths from the corresponding traversal weight; and
- (e) re-placing and wiring nets according to the net
weight value to eliminate the critical paths in the integrated

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circuit design ~~[A method as in claim 3]~~ wherein step (b) of identifying critical paths comprises forming a slack graph indicating path slack and edges within the ~~[said]~~ critical paths and removing ~~[7]~~ non-critical paths ~~[being deleted]~~ from the ~~[said]~~ slack graph.

5. (currently amended): A method as in claim 4 wherein step (c) ~~[of weighting edges]~~ comprises ~~[the]~~ steps of:

(c1) ~~[i+]~~ traversing each ~~[said]~~ critical path ~~[paths]~~ from front to back and assigning ~~[7]~~ an input path weight for ~~[being assigned to]~~ each edge encountered in traversing each critical path ~~[said traversal]~~;

(c2) ~~[i+]~~ traversing each critical path from back to front and assigning ~~[7]~~ an output path weight for ~~[being assigned to]~~ each edge encountered ~~[edge]~~ in traversing each critical path ~~[said reverse traversal]~~; and

(c3) ~~[i+i]~~ summing the ~~[said assigned]~~ input path weight and the ~~[said assigned]~~ output path weight for each edge.

6. (currently amended): A method as in claim 5 wherein assigning a net weight ~~[criticality]~~ value comprises: sorting nets according to traversal ~~[edge]~~ weight into groups;

~~[grouping sorted nets,]~~ and assigning a net weight ~~[criticality]~~ value to each of the groups ~~[group]~~.

7. (currently amended): A method as in claim 6 wherein the step (e) ~~[+]~~ of re-placing and wiring nets comprises:

(e1) ~~[+]~~ selecting an edge having a highest traversal

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weight [criticality] value;

(e2) [ii] adjusting cell placement and net wiring for the [said] selected edge; and

(e3) [iii] checking for remaining critical edges and repeating steps (e1) and (e2) [i-ii] until no critical edges are found.

8. (currently amended): A method as in claim 7 further including prior to ~~[the step (iii) of]~~ checking for remaining critical edges a ~~[the]~~ step of ~~[i-iiiA]~~ checking to determine if exit criteria are met and ending if the [said] exit criteria are met.

9. (currently amended): A computer-readable medium having stored thereon a plurality of instructions, the plurality of instructions including instructions which, when executed by a processor, cause the processor to:

- (a) place and wire an integrated circuit design;
- (b) generate a slack graph to [a] identify critical paths in an integrated circuit design;
- (c) calculate traversal weights for [b-weight] edges in the [identified said] critical paths;
- (d) [c] assign a net weight value from the traversal weights [net criticality to each weighted edge responsive to edge weight]; and
- d) re-place and wire nets according to the net weight value [edge-criticality].

10-11. (canceled)

12. (currently amended): A computer-readable medium having stored thereon a plurality of instructions, the

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plurality of instructions including instructions which, when executed by a processor, cause the processor to:

(a) place and wire an integrated circuit design;

(b) identify critical paths in the integrated circuit

design;

(c) calculate a corresponding traversal weight for each edge in the critical paths;

(d) assign a net weight value from the corresponding traversal weights to each edge in the critical paths; and

(e) re-place and wire nets according to the net weight value to eliminate the critical paths from the integrated circuit design [A computer-readable medium as in claim 11] wherein identifying critical paths comprises forming a slack graph indicating path slack and edges within the [said] critical paths and removing [-] non-critical paths [being deleted] from the [said] slack graph.

13. (currently amended): A computer-readable [computer-readable] medium as in claim 12 wherein [step] (c) of weighting edges causes the processor to:

(c1) [i+] traverse each [said] critical path [paths] from front to back and assign [-] an input path weight for [being assigned to] each edge encountered in traversing each critical path [said traversal];

(c2) [i+] traverse each critical path from back to front and assign [-] an output path weight for [being assigned to] each edge encountered [edge] in traversing each critical path [said reverse traversal]; and

(c3) [i+] sum the [said assigned] input path weight and the [said assigned] output path weight for each edge.

14. (currently amended): A computer-readable

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~~[computer-readable] medium as in claim 13 wherein assigning a net weight value [criticality] causes the processor to: sort nets according to traversal [edge] weight into groups;~~

~~[group sorted nets,] and assign a net weight [criticality] value to each of the groups [group].~~

15. (currently amended): A computer-readable ~~[computer-readable]~~ medium as in claim 14 wherein re-placing and wiring nets causes the processor to:

~~(e1) [i+] select an edge having a highest traversal weight [criticality] value;~~

~~(e2) [i+] adjust cell placement and net wiring for the [said] selected edge; and~~

~~(e3) [iii] check for remaining critical edges and repeating steps (e1) and (e2) [i-ii] until no critical edges are found.~~

16. (currently amended): A computer-readable ~~[computer-readable]~~ medium as in claim 15 wherein if exit criteria are met, ~~the~~ [said] processor is caused to end prior to selecting and adjusting all critical edges.

17. (new): A method as in claim 1 wherein step (d) comprises identifying bottlenecks.

18. (new): A computer-readable medium as in claim 9 wherein (d) comprises identifying bottlenecks.